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10/563,248	01/04/2006	Mitsuru Uesugi	L9289.05201	8676

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EXAMINER
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WILLIAMS, LAWRENCE B

ART UNIT	PAPER NUMBER
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2611

MAIL DATE	DELIVERY MODE
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08/04/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/563,248	<b>Applicant(s)</b> UESUGI, MITSURU	
	<b>Examiner</b> LAWRENCE B. WILLIAMS	<b>Art Unit</b> 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 12 April 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 12-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13 and 15 is/are allowed.
- 6) ☒ Claim(s) 12, 14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments with respect to claims 12-15 have been considered but are moot in view of the new ground(s) of rejection.

### ***Specification***

2. The disclosure is objected to because of the following informalities:

a.) Paragraph [0138] reads “an inverse discrete Fourier transform is **applied to** the spreading code generator and the spreader”. However, the claims and figures teach the inverse discrete transformer constitutes the spreading code generator and the spreader. The examiner suggests, “constitutes” or “applied as”.

b.) Paragraph [0140] reads “a plurality of cascaded inverse discrete Fourier transformers is **applied to** the spreading code generator and the spreader”. However, the claims and figures teach the plurality of inverse discrete Fourier transformers constitute the spreading code generator and the despreader. The examiner suggests, “constitutes” or “applied as”.

Appropriate correction is required.

### ***Claim Objections***

3. Claim 15 is objected to because of the following informalities: The examiner assumes applicant meant, “despreader” instead of spreader in line 10 of the claim. Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 12, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ojha et al. (Impact of Noise and Target Fluctuation on the Performance of Frank Polyphase Coded Radar Signals) in view of Ohmi et al. (US Patent 7,330,496 B2).

(1) Regarding claim 12, Ojha et al. discloses a CDMA transmission apparatus comprising:

generating a  $b^{\text{th}}$  chip  $C(a,b)$  of an  $a^{\text{th}}$  spreading code (the polyphase sequences of Ojha et al. are spreading codes) by a following equation,

$$C(a,b) = e^{j(2n\pi/N)}$$

where  $e$  is a base of natural logarithm,  $N$  is a length of the spreading code,  $n=ab$ ,  $a=0\sim N-1$ , and  $b=0\sim N-1$  (pg. 616, II. Frank Coded Waveforms). A spreading code generator or equivalent would be inherent.

Ojha et al. does not teach a spreader that spreads a transmission signal using the spreading code generated in the spreading code generator, wherein an inverse discrete Fourier transformer is used to constitute the spreading code generator and the spreader.

However, Ohmi et al. discloses in Fig. 1, an inverse discrete Fourier transform (IFFT, 15; It is well-known in the art that all IFFT functions may be replaced by an inverse discrete Fourier transform) is used to constitute a spreading code generator (abstract, Ohmi et al. discloses

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carrying out inverse Fourier transform of channel identification codes to generate spreading codes and inverse spreading codes. Thus the inverse Fourier transform section (Fig. 1, element 15 constitutes a spreading code generator and discloses a spreader Fig. 1, element 22). All of the components of applicant's invention are known in the prior art. The only difference in the invention of Ohmi et al. is that the spreader is separate from the spreading code generator (inverse Fourier transform section).

It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate the spreader into the inverse Fourier transform section/spreading code generator for compactness, since one of ordinary skill in the art would have recognized that the results would be predictable, i.e., each element merely performs the same function as it does separately, and it would have been obvious to one of ordinary skill in the art at the time of invention to incorporate the teachings of Omni et al. to provide a spread spectrum communication system and method that are superior to conventional ones in transmission characteristics and multiplexing capacity.

(2) Regarding claim 14, claim 14 discloses a reception apparatus for the spreading code of claim 12. As noted above, Ojha et al. discloses the spreading generator for the transmitter. It is well-known in the art the receiving apparatus for spreading codes would have a spreading code generator that generates an inverse spreading code (creating respective complex conjugates) to undo the spreading code applied at the transmitter to obtain the transmitted data. Therefore it would be obvious to one of ordinary skill in the art at time of invention to incorporate a spreading code generator that generates a spreading code by the equation;

$C^*(a, b) = e^{-j(2n\pi/N)}$  (to create respective complex conjugates) to obtain the transmitted data spread by spreading code  $C(a, b) = e^{j(2n\pi/N)}$ .

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Ojha et al. does not disclose wherein a discrete Fourier transformer is used to constitute the spreading code generator and the despreaders.

However, Ohmi et al. discloses in Fig. 1, a discrete Fourier transform (15) is used to constitute a spreading code generator (col. 6, lines 16-20; Ohmi et al. discloses elements of found vectors replace by their respective conjugate complex numbers, thereby obtaining inverse spreading codes to be used by the receiving apparatus, inherently implying an DFT/FFT (inverse of IDFT/IFFT) to create inverse spreading codes (inverse spreading codes storage section, 33, Fig. 1). All of the components of applicant's invention are known in the prior art. The only difference in the invention of Ohmi et al. is that the despreaders is separate from the spreading code generator (discrete Fourier transform section).

It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate the despreaders into the discrete Fourier transform section/spreading code generator for compactness, since one of ordinary skill in the art would have recognized that the results would be predictable, i.e., each element merely performs the same function as it does separately, and it would have been obvious to one of ordinary skill in the art at the time of invention to incorporate the teachings of Ohmi et al. to provide a spread spectrum communication system and method that are superior to conventional ones in transmission characteristics and multiplexing capacity.

***Allowable Subject Matter***

6. Claims 13, 15 are allowed.

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7. The following is a statement of reasons for the indication of allowable subject matter:

The instant application discloses a CDMA transmission and reception apparatus. A search of prior art records has failed to teach or suggest, alone or in combination:

A CDMA transmission apparatus, comprising:

“a plurality of cascaded inverse discrete Fourier transformers are used to constitute the spreading code generator and the spreader, and performing inverse discrete Fourier transform on the transmission signal hierarchically” (Fig. 17) as disclosed in claim 13.

A CDMA reception apparatus, comprising:

“a plurality of cascaded discrete Fourier transformers are used to constitute the spreading code generator and the spreader, and perform discrete Fourier transform on the received signal hierarchically” (Fig. 18) as disclosed in claim 15.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a.) Sawahashi et al. discloses Radio Transmission System And Method, and Transmitter Apparatus And Receiver Apparatus Used In The Radio Transmission System in US Patent 7,324,434 B2.

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9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence B Williams whose telephone number is 571-272-3037. The examiner can normally be reached on Monday-Friday (8:00-6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ghayour Mohammad can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Tesfaldet Bocure/  
Primary Examiner, Art Unit 2611

lbw  
August 3, 2010